

## AMENDMENTS TO THE CLAIMS

**The following is a complete listing of the claims indicating the current status of each claim and including amendments currently entered as highlighted.**

1. (Currently Amended) A computer-implemented method of searching an ordered database using transformed key entries, the method comprising the steps of:

- (a) providing a system including:
  - (i) a memory adapted to store ~~for storing~~ a plurality of key entries, and
  - (ii) processing logic ~~for~~ operative to:
    - (A) ~~transforming~~ transform each key entry of said key entries into a respective coded entry, said respective coded entry containing information corresponding to some information present in said key entry, and
    - (B) ~~searching~~ search said coded entries;
- (b) performing a pre-determined transformation of each said key entry to produce said respective coded entry, ~~so-as~~ to obtain a plurality of coded entries, and
- (c) performing a deterministic search in at least one data structure within said memory to obtain a match between an input key and a key entry of said key entries,

wherein a length, expressed as a number of bits, of said respective coded entry is reduced with respect to a length, expressed as a number of bits, of said key entry from which said respective coded entry was transformed,  
and wherein a function operative to perform ~~for performing~~ said pre-determined transformation is substantially independent of specific content of each said key entry of said key entries.

2. (Currently Amended) The method of claim 1, wherein said match is a unique match, ~~search is deterministic with respect to specific key data.~~

3. (Currently Amended) The method of claim 1, wherein said match is a particular match, and wherein performing said deterministic search in said at least one data structure includes:

(i) searching said coded entries to identify a potential match between said input key and said key entry of said key entries, and

(ii) searching said key entries to determine whether said potential match is said particular match.

~~claim 2, wherein said specific key data includes said input key.~~

4. (Currently Amended) The method of claim 1~~claim 2~~, wherein said search is deterministic with respect to specific key data, and wherein said specific key data includes said key entries.

5. (Currently Amended) The method of claim 1~~claim 2~~, wherein said search is deterministic with respect to specific key data, and wherein said specific key data includes said coded entries in said data structure.

6. (Original) The method of claim 1, wherein said search is deterministic with respect to a required amount of auxiliary data.

7. (Canceled)

8. (Original) The method of claim 1, wherein each coded entry of said coded entries includes information relating to at least one different key entry of said key entries.

9. (Original) The method of claim 8, wherein said at least one different key entry is a single key entry.

10. (Original) The method of claim 8, wherein said information includes positional information.

11-12. (Canceled)

13. (Previously Presented) The method of claim 1, wherein said transformation is a deterministic transformation in which said length of said respective coded entry depends on said length of said key entry from which said respective coded entry was transformed.

14. (Currently Amended) The method of claim 1, wherein said performing of said deterministic search includes:

- (i) processing said coded keys to determine a required set of auxiliary data, said set being required to proceed with said search, and
- (ii) using said required set of auxiliary data ~~for~~ to perform an additional processing of said coded keys ~~so~~ as to determine a result of said search.

15. (Original) The method of claim 14, wherein said auxiliary data includes a portion of a key entry, and wherein said portion is then compared to said input key.

16. (Original) The method of claim 1, wherein said search is an exact search, and wherein said performing of said deterministic search includes:

- (i) processing said coded keys to determine a required set of auxiliary data, said set being required to proceed with said search, and
- (ii) comparing said set with said input key to determine a result of said search.

17. (Previously Presented) The method of claim 1, wherein for said key entries of any finite length, said length of each said respective coded entry, after performing said transformation, is up to a closest integer larger than log base 2 of said length of said key entry from which said respective coded entry was transformed.

18. (Previously Presented) The method of claim 13, wherein said length of said respective coded entry depends solely on said length of said key entry from which said respective coded entry was transformed.

19. (Previously Presented) The method of claim 1, wherein for said key entries of any finite length, said length of each said respective coded entry, after performing said transformation, is substantially equal to a rounded up, closest integer of log base 2 of said length of said key entry from which said respective coded entry was transformed.

20. (Original) The method of claim 1, wherein said transformation is a unidirectional transformation.

21. (Currently Amended) A computer-implemented method of searching an ordered database using transformed key entries, the method comprising the steps of:

- (a) providing a system including:
  - (i) a memory adapted to store ~~for storing~~ a plurality of key entries, and
  - (ii) processing logic operative to: ~~for:~~
    - (A) transforming each key entry of said key entries into a respective coded entry, and
    - (B) searching said coded entries;
- (b) performing a transformation of each said key entry to produce said respective coded entry, ~~so as to obtain a plurality of coded entries,~~ said respective coded entry containing information corresponding to some information present in said key entry;
- (c) arranging said coded entries in a search-tree structure having at least one node, such that each of said at least one node includes a particular plurality of said plurality of coded entries, and
- (d) performing a deterministic search within said at least one node of said search-tree structure ~~so as to obtain a match between an input key and a key entry of said key entries,~~

wherein a length, expressed as a number of bits, of said respective coded entry is reduced with respect to a length, expressed as a number of bits, of said key entry from which said respective coded entry was transformed.

22. (Original) The method of claim 21, wherein each said coded entry of said coded entries includes information relating to at least one different key entry.

23. (Canceled)

24. (Original) The method of claim 21, wherein each coded entry of said coded entries includes positional information relating to a different respective key entry.

25. (Previously Presented) The method of claim 21, wherein said transformation is a deterministic transformation in which a length of said respective coded entry depends on a length of said key entry from which said respective coded entry was transformed.

26. (Currently Amended) The method of claim 21, wherein said transformation is a pre-determined transformation wherein a function ~~for performing~~ operative to perform said pre-determined transformation is substantially independent of specific content of each said key entry of said key entries.

27. (Previously Presented) The method of claim 21, wherein for said key entries of any finite length, a length of each said respective coded entry, after performing said transformation, is up to a closest integer larger than log base 2 of said length of said key entry.

28. (Original) The method of claim 27, wherein said auxiliary data includes at least a portion of a key entry of said key entries.

29. (Original) The method of claim 28, wherein a size of said auxiliary data equals less than half of a size of said key entries.

30. (Original) The method of claim 27, wherein said auxiliary data is a portion of a single key entry.

31. (Currently Amended) The method of claim 21, wherein said information corresponding to some information present in said key entry ~~for a particular coded entry of said compacted coded key entries~~ includes information resulting from at least one varying bit.

32. (Original) The method of claim 31, wherein said at least one varying bit includes a most significant bit.

33. (Original) The method of claim 21, wherein said search is deterministic with respect to specific key data.

34. (Original) The method of claim 33, wherein said specific key data includes said input key.

35. (Original) The method of claim 33, wherein said specific key data includes said key entries.

36. (Currently Amended) The method of claim 21, wherein said match is a particular match, and wherein performing said deterministic search in said at least one data structure includes:

(i) searching said coded entries to identify a potential match between said input key and said key entry of said key entries, and

(ii) searching said key entries to determine whether said potential match is said particular match.

~~The method of claim 33, wherein said specific key data includes said coded entries in said data structure.~~

37. (Original) The method of claim 21, wherein said search is deterministic with respect to a required amount of auxiliary data.

38. (Currently Amended) The method of claim 21, wherein said match is a unique match. ~~search is a pre-determined search.~~

39. (Canceled)

40. (Previously Presented) The method of claim 25, wherein said length of said respective coded entry depends solely on said length of said key entry from which said respective coded entry was transformed.

41. (Previously Presented) The method of claim 25, wherein for said key entries of any finite length, said length of each said respective coded entry, after performing said transformation, is substantially equal to a rounded up, closest integer of log base 2 of said length of said key entry from which said respective coded entry was transformed.

42. (New) A computer-implemented method of searching an ordered database using transformed key entries, the method comprising the steps of:

- (a) providing a system including:
  - (i) a memory adapted to store a plurality of key entries, and
  - (ii) processing logic operative to:
    - (A) transform each key entry of said key entries into a respective coded entry, and
    - (B) search said coded entries;
- (b) performing a pre-determined transformation of each said key entry to produce said respective coded entry, to obtain a plurality of coded entries, and
- (c) performing a deterministic search in at least one data structure within said memory to obtain a match between an input key and a key entry of said key entries,

wherein a length, expressed as a number of bits, of said respective coded entry is reduced with respect to a length, expressed as a number of bits, of said key entry from which said respective coded entry was transformed,

wherein a function operative to perform said pre-determined transformation is substantially independent of specific content of each said key entry of said key entries,

and wherein said information includes information resulting from at least one varying bit, said at least one varying bit including a most significant bit.



43. (New) The method of claim 42, wherein said respective coded entry contains some information present in said key entry.

44. (New) The method of claim 42, wherein said match is a particular match, and wherein performing said deterministic search in said at least one data structure includes:

- (i) searching said coded entries to identify a potential match between said input key and said key entry of said key entries, and
- (ii) searching said key entries to determine whether said potential match is said particular match.

45. (New) A computer-implemented method of searching an ordered database using transformed key entries, the method comprising the steps of:

- (a) providing a system including:
  - (i) a memory adapted to store a plurality of key entries, and
  - (ii) processing logic operative to:
    - (A) transform each key entry of said key entries into a respective coded entry, and
    - (B) search said coded entries;
- (b) performing a transformation of each said key entry to produce said respective coded entry, to obtain a plurality of coded entries, said respective coded entry containing information corresponding to some information present in said key entry;
- (c) arranging said coded entries in a search-tree structure having at least one node, such that each of said at least one node includes a particular plurality of said plurality of coded entries, and
- (d) performing a deterministic search within said at least one node of said search-tree structure to obtain a match between an input key and a key entry of said key entries,

wherein a length, expressed as a number of bits, of said respective coded entry is reduced with respect to a length, expressed as a number of bits, of said key entry from which said respective coded entry was transformed.

wherein a first coded entry of said coded entries includes positional information relating to a first key entry, and wherein a second coded entry of said coded entries includes positional information relating to a second key entry, said second key entry being different from said first key entry.

46. (New) A computer-implemented method of searching an ordered database using transformed key entries, the method comprising the steps of:

- (a) providing a system including:
  - (i) a memory adapted to store a plurality of key entries, and
  - (ii) processing logic operative to:
    - (A) transform each key entry of said key entries into a respective coded entry, and
    - (B) search said coded entries;
- (b) performing a pre-determined transformation of each said key entry to produce said respective coded entry, to obtain a plurality of coded entries, and
- (c) performing a deterministic search in at least one data structure within said memory to obtain a particular match between an input key and a key entry of said key entries,

wherein a length, expressed as a number of bits, of said respective coded entry is reduced with respect to a length, expressed as a number of bits, of said key entry from which said respective coded entry was transformed,

wherein a function operative to perform said pre-determined transformation is substantially independent of specific content of each said key entry of said key entries,

wherein performing said deterministic search in said at least one data structure includes:

- (i) searching said coded entries to identify a potential match between said input key and said key entry of said key entries, and
- (ii) searching said key entries to determine whether said potential match is said particular match.